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Relative prototypicality for a high-status group can counteract ego-threat after individual failure

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Abstract

Two studies demonstrate that members of high-status groups (i.e., men and students of business administration) but not members of low-status groups (i.e., women and education students) react with an increase in state self-esteem after an alleged poor performance on a fictitious intelligence test. This Failure-as-an-Asset (FA) effect is only observed when the high-status ingroup (i.e., men) is outperformed by a low-status outgroup (i.e., women). In this case, a poor performance will lead to a strong identification with the ingroup due to high ingroup prototypicality. As predicted, the effects of experiencing success or failure on self-esteem were mediated by identification with the ingroup.

Introduction

There is little doubt that individuals in contemporary western societies are supposed to strive for and enjoy success, and that success feels good. A person who succeeds in his or her occupation, in school, on a task, or on a specific test is very likely to feel better about himself or herself than a person who fails. However, we believe that there are certain conditions under which *failure* might actually lead to positive self evaluations and positive state self-esteem.

Why should failure sometimes feel good? We predict that people will show enhanced feelings of personal worth after receiving negative individual performance feedback when this negative performance signifies that they are a prototypical member of a high-status group. Consider the case of a man who receives feedback that he has done poorly on a test of current fashion styles. He might be inclined to react positively to his own bad performance because he knows that women in general outperform men in this performance domain. It is therefore typical of a "real" man to fail in this kind of task.

Following this line of reasoning, the prediction that failing sometimes feels good will be based on previous research that has shown that (1) self esteem will be affected not only by individual performance feedback, but also by factors related to group membership or social identity (Tajfel & Turner, 1986; Hogg, 2005), with the consequence that (2) individual failure or success may inform people about their ingroup prototypicality (Reinhard, Stahlberg, & Messner, 2008).

How success and failure affects self-evaluation and self-esteem

In general, failure in self-relevant domains has been shown to diminish state self-esteem, whereas success in such domains has been shown to increase state self-esteem (e.g., Crocker, Karpinski, Quinn, & Chase, 2003; Crocker & Park, 2004; Crocker, Sommers, & Luhtanen, 2002; Dittes, 1969). Thus, because state self-esteem is sensitive to positive and negative performance feedback (i.e., success or failure; e.g., Nummenmaa & Niemi, 2004), people try to overcome personal failures, for example, by engaging in self-serving information

processing. They try to distance themselves from failure and associate themselves with success by attributing the former to external factors, but claim (sometimes unwarranted) personal responsibility for the latter (e.g., Schlenker, Weigold, & Hallam, 1990; Dauenheimer, Stahlberg, Frey & Petersen, 2002). They also tend to protect self-esteem via favorable social comparisons or ingroup identification (e.g., Turner, Hogg, Turner, & Smith, 1984; Wood, 1989).

However, although individual success and failure can be conceived as exerting strong influences on self-esteem, they are certainly not the only impact factors. Social identity theory has proposed membership in social groups of different social status as a second major source of self-esteem.

Self-evaluation, self-esteem, and social identity

High self-esteem will follow from being a member of a high-status group: Mere membership in high-status or privileged groups implies an array of social, affective, self-evaluation and economic advantages (e.g., high self-esteem, higher incomes, social acceptance, prestige) (Abrams, & Hogg, 2001; Hogg, & Abrams, 1988). Members of high-status groups are perceived as more worthy and competent, evoke more positive attitudes, possess more social and economic power, and are less likely to become victims of prejudice and personal discrimination than members of groups with lower social status (e.g., Crocker, Major, & Steele, 1998; Major, Gramzow, McCoy, Levin, Schmader, & Sidanius, 2002). People therefore strive to affiliate with successful others (e.g., basking in reflective glory; Cialdini, Borden, Thorne, Walker, Freeman, & Sloan, 1976), try to be part of groups that are positively distinct from other groups in status, prestige, and social valence (see e.g., Hogg, 2006), and are inclined to see groups they belong to as superior to other groups (Lau & Russell, 1980; Tajfel & Turner, 1979).

The self-concept benefits of being a member of a high status group will be enhanced even more by being a very typical member of such a group (e.g., Barkow, 1975; Anderson, Srivastava, Beer, Spataro, & Chatman, 2006). According to self categorization theory (e.g., Turner, Hogg, Oakes, Reicher, Wetherell, 1987), social categories or groups are represented in terms of prototypes - "fuzzy sets of attributes (beliefs, attitudes, feelings, and behaviors) that simultaneously capture similarities among group members and differences between members of one group and another group" (Hogg, 2005, p 245). These prototypes constitute group norms (e.g., Turner, 1991) by describing how members typically are and prescribing how members typically ought to be. In order to maintain the positivity and distinctiveness of a group, people pay close attention to the group prototype, with the consequence that those who deviate from the group's norms are downgraded or excluded, while those who fit the group prototype closely (i.e., central members, high prototypicality) are upgraded and imbued with status, popularity, and social influence (Eidelman, Silvia, & Biernat, 2006; Hogg, 2001, 2005). The importance of group prototypicality is also highlighted by the fact that even highly successful people (i.e., over-achievers or ''tall-poppies''), an example of positive deviants, are not liked very much and often evoke feelings of malicious pleasure if they experience failure (i.e., schadenfreude) (e.g., Feather, 1994; Feather & Sherman, 2002; see also Leach, Spears, Branscombe, & Doosje, 2003). In most cases, neither positive nor negative deviants contribute to a consensual prototype or to the entitativity of the group (e.g., Hogg, 2005).

In sum, social identities can serve positive self-views best under the following two conditions: (1) the ingroup is positively distinct from relevant outgroups in a given comparative context, and (2) individuals are very close to the prototype of this group, i.e. they possess relative ingroup prototypicality. Therefore, the final question to be addressed here is this: Why do we think that failure can sometimes enhance prototypicality for a high status group?

Prototypicality following personal failure: when failing feels good

Reinhard et al. (2008) have presented some evidence that failure can become an asset when people are evaluated by others in terms of future career success (Failure-as-an-Asset effect). Participants in their experiments had to evaluate a target person (e.g., a man or woman) on the basis of her or his score in a test on logical reasoning or innovative thinking. At the same time, participants received feedback on the alleged average test scores of the ingroup of the target (e.g., men or women) and an outgroup (women or men). The Failure-as-an-Asset effect occurred for high-status targets (i.e., male targets): a male stimulus person who failed in a test on innovative thinking in which women outperformed men was perceived as a prototypical exemplar of the high-status group "men." High occupational success was then attributed to him. In contrast, low-status targets (i.e., women) did not profit from individual failure, unless sufficient individuating information was available that rendered the low-status target explicitly typical for the high-status group.

These studies clearly show that under certain conditions, failure can lead to positive evaluations when people are asked to judge others. At this point, however, these findings cannot be expected to automatically generalize to intrapersonal reactions to own poor performances. Whereas evaluating unknown and unrelated others might be based solely on so-called cold cognitions (Metcalfe & Mischel, 1999; Tetlock & Levi, 1982), reacting to personal success or failure might involve affects such as experiencing anxiety or shame, or evoke motives of self-esteem protection and self-defense (Weiner, 1985). After all, failure is often highly self-threatening as well as strongly affect-laden information.

Taking these differences into account, we still propose that individual failure might lead to positive consequences, such as an enhanced feeling of self-esteem, under the conditions outlined above. Given that affiliations with successful others - or in a more general sense, membership in a high status or privileged group - combined with the status within the group (e.g., group prototypicality) will affect one's self-esteem, any performance or behavior that

makes one prototypical of a high-status ingroup should elevate self-esteem. Thus, we suggest that even personal failures in self-relevant tasks might enhance self-esteem if failing renders one prototypical of a high-status group. This should be the case if one fails in a domain or task in which a low-status group in general outperforms the high status group. For example, after failing in the feminine domain of fashion judgments, men, though they have an obvious shortcoming, might feel comfortable because they see themselves as very masculine. They are expected to react with an increase in state self-esteem due to the fact that they performed in a way that is highly prototypical for men, a high status group.

Previous studies have already shown that domains in which higher status groups excel are usually valued highly, whereas domains in which lower status groups excel are devalued and regarded as having no or little utility for gaining status-relevant rewards (e.g., Schmader, Major, Eccleston, & McCoy, 2001). Such an effect would result in stronger effects of success and failure on dimensions in which the high-status group outperforms the low status group. The present research hypotheses, however, will go one step further and argue that the effects of failing in a low-status domain go beyond this general principle. Instead of becoming merely unimportant or trivial because of the devaluation of the domain, our hypothesis is that such a failure by a member of the high status group will have positive effects in so far as it triggers the attribution of high prototypicality for this ingroup. This attribution will then lead to highly positive self-evaluations, as has been discussed before (see, e.g., Barkow, 1975; Hogg, 2001, 2005; Leary & Downs, 1995; Srivastava, & Beer, 2005).

Women (or in a more general sense, low-status persons), on the other hand, should feel discomfort following individual failure regardless of the sex-typedness of the domain in question. No Failure-as-an-Asset effect should occur. Though failure in a male domain should maintain social (gender) identity (i.e, perceiving oneself as typically feminine; see e.g., Bem & Lenney, 1976), the lower social status of the social group is unlikely to buffer ego-threat because it is nothing to be especially proud of. Furthermore, women who fail in a feminine

domain might suffer social identity threat because they are led to perceive themselves as distinct from their ingroup. In addition, it is not expected that women will perceive themselves as typical for the (high-status) outgroup under that condition, as the studies of Reinhard et al. have suggested: at least in the context of interpersonal performance evaluations, it obviously requires more evidence for an outgroup member to become prototypical for this group than a mere incident of failure. Positive attributes associated with the high-status outgroup are therefore unlikely to bolster self-esteem for women in this case.

Overview of the experiments

Individual success and failure and the social valence of own group membership are both important factors that are expected to determine one's self-evaluation and self-esteem. Based on previous findings discussed above, we predict that high-status group members will react with an increase in state self-esteem following a negative performance if this failure renders the person prototypical of the high-status group s/he belongs to. The proposed effect of failure on state self-esteem in a low-status domain is therefore expected to be mediated by the tendency of high-status targets to identify strongly with their high-status ingroup, thereby not only counteracting ego threat, but boosting self-esteem because of high perceived prototypicality.

We tested these assumptions in two experiments based on an experimental design developed by Leutze (1995) in an unpublished diploma thesis at the University of Mannheim. Participants were provided with false feedback about their own performance (positive vs. negative), as well as false feedback about the performances of a self-relevant high-status group and a low-status group in general (high-status group outperforms low-status group and vice versa) on an alleged intelligence test measuring innovative thinking. Participants were natural members of either the low-status group or high-status group. This procedure was the same across both studies. While we used gender categories in Experiment 1 to vary

differences in social status, in Experiment 2 we used two other groups differing in social status based on study courses (students of business administration vs. students training to become teachers).

Experiment 1

Method

Subjects and Design

A total of 83 students (44 female and 39 male) at a German university participated in the experiment which was labeled "intelligence and environment" (mean age: 23.54). Each subject was randomly assigned to experimental conditions in a 2 (individual feedback: negative versus positive) x 2 (relative gender performance: men better versus women better) x 2 (sex of participant) factorial design. The experiment lasted approximately 25 minutes and was conducted in single sessions.

Procedure and Material

Participants were informed that the experiment dealt with innovative thinking, introduced as one of the core components of general intelligence. Participants were told that the German Department for Research and Intelligence had recently developed a standardized test to measure innovative thinking (fictitious test: ATLG1), and that it had been validated in a sample of 5,000 people.

After the presentation of this information, participants were instructed that they would have to perform the computer-based version of the ATLG1. They were further instructed that they would get immediate feedback about their performance and some reference scores consisting of average scores of some norm populations. Finally, they were told that they would have to answer a few questions about the test and their own performance on it. The ATLG1 actually consisted of 13 matrices derived from the *advanced progressive matrices* intelligence test (Raven, 1998; Heller,Kratzmeier, & Lengfelder, 1998). Raven's Progressive

Matrices are non-verbal intelligence tests, where one is asked to find the missing part required to complete a pattern. The patterns get progressively harder to complete, requiring more and more cognitive capability. After performing the ALTG1, participant's fictitious individual test score was displayed on the middle part of the screen. In addition, the average test scores of women and men were both presented on the lower part of the screen.

We manipulated participants' individual performance by reporting either a high individual score (75 out of 100 points) or a low individual score (55 points). The group performances of women and men (i.e. relative gender performance) were manipulated by reporting either that women allegedly outperformed men on the ATLG1 (women-better condition: 71 vs. 59 points), or that men allegedly outperformed women (men-better condition). For example, participants in the women-better condition who received false feedback that they had performed poorly read the following information: "Your test score on the ATLG1 is: 55 points. Women generally received an average test score of 71 points, compared to an average score of 59 points for men." To ensure that participants paid close attention to this information, they were asked to copy the test scores from the screen to a response sheet, ostensibly to facilitate data analysis. Before responding to the dependent measures, participants had to hand this response sheet to the experimenter.

Measures

Participants responded to all items on 8-point scales ranging from "strongly disagree" (1) to "strongly agree" (8). We measured participant's state self-esteem with six items taken from Heatherton and Polivy's (1991) subscale *performance* (Cronbach's *alpha* = .85): "I feel confident about my abilities;" "I feel frustrated or rattled about my performance;" "I feel as smart as others;" "I feel confident that I understand things;" "I feel that I have less scholastic ability right now than others;" and "I feel like I'm not doing well." Global self-esteem was assessed with the following three items taken from Rosenberg (1989; Cronbach's *alpha* = .80): "On the whole, I am satisfied with myself," "At times, I think I am no good at all," "I

feel that I have a number of good qualities." We then assessed participant's identification with her or his own gender category with four items adapted from Luthanen and Crocker's (1992) subscale *identity* taken from their *collective self-esteem scale* (Cronbach's *alpha* = .84): "Overall, my gender has very little to do with how I feel about myself;" "The gender I belong to is an important reflection of who I am;" "The gender I belong to is unimportant to my sense of what kind of a person I am;" and "In general, belonging to social groups is an important part of my self-image." Finally, participants had the opportunity to write down what they believed the study was aiming at. At the end of the experiment participants were thoroughly debriefed and dismissed by a research assistant.

Results

Because analyses of the final statements indicated that ten participants became suspicious of the experimental procedure, they were excluded from further analyses.[1] Unless otherwise noted, the data of 83 subjects were analyzed using 2 (relative gender performance) x 2 (individual performance) x 2 (sex of participants) univariate analyses of variance (ANOVAs).

Following our hypotheses, we expected significant three-way interactions on both participant's state self-esteem as well as on their collective self-esteem, but not on global self-esteem. Specifically, male participants should react with an increase in state self-esteem after successful rather than unsuccessful performance in the men-better condition, whereas the reverse should be true in the women-better condition. Female participants should only react with an increase in self-esteem following successful performance in either of the relative gender performance conditions. An identical pattern was expected for participants' identification with their own sex, which, in turn, should function as a mediator for the effects on state self-esteem. Global self-esteem, by contrast, should be unaffected by the manipulations, because global self-esteem is conceptualized as a stable trait that does not strongly fluctuate over time and situations (Block & Robins, 1993). However, the global self-

esteem measure was included to rule out the possibility that the manipulations will affect any variable in the same way.

State self-esteem

The first section of Table 1 displays participants' state self-esteem as a function of relative gender performance, individual performance, and sex of participant. Results show that participants who allegedly performed individually well reported higher state self-esteem than those who alledgedly performed individually poorly (4.63 vs. 4.04; $F(1, 75) = 8.56$, $p < .005$). Furthermore, the interaction of individual performance with sex of target was marginally significant ($F(1, 75) = 3.41$, $p < .07$). While female participants reported higher state self-esteem when they received positive compared to negative feedback (4.81 vs. 3.83), $F(1, 75) = 12.61$, $p < .001$, male participants showed no difference in state self-esteem between conditions (4.42 vs. 4.26; $F < 1$). A significant individual performance x relative gender performance interaction occurred, $F(1, 75) = 18.41$, $p < .001$, indicating that, given the men-better condition, participants with positive compared to negative feedback reported higher state self-esteem (5.13 vs. 3.72, $F(1, 75) = 26.11$, $p < .001$). In the women-better condition there was no difference between conditions (4.04 vs. 4.38; $p > .25$). These effects, however, were qualified by the predicted three-way interaction, $F(1, 75) = 8.37$, $p < .01$. Supplementary analyses were conducted to identify differences in the responses of male vs. female participants depending on the manipulations.

Focusing on male participants only, the predicted interaction of relative gender performance and individual performance was significant, ($F(1, 35) = 19.24$, $p < .001$). Results indicated higher state self-esteem in case of positive compared to negative individual feedback in the men better-condition (5.26 vs. 3.65), $F(1, 35) = 11.58$, $p < .005$, $r = .50$. By contrast, in the women-better condition, negative rather than positive individual feedback led to higher state self-esteem (4.93 vs. 3.57), $F(1, 35) = 7.91$, $p < .01$, $r = .40$.

Focussing on female participants only, a significant main-effect of individual performance was found, $F(1, 42) = 17.09$, $p < .001$, indicating higher state self-esteem after positive than negative individual feedback (4.81 vs. 3.83). The interaction of relative gender performance and individual performance was not significant, ($p > .18$).

Participants' identification with their own gender category

Table 1 (second section) displays participants' identification with their own gender category as a function of relative gender performance, individual performance, and sex of participant. Results show the following two significant interactions: individual performance x sex of target ($F(1, 75) = 4.14$, $p < .05$), and individual performance x relative gender performance ($F(1, 75) = 5.29$, $p < .05$). The two-way interactions in detail: while male participants reported higher identification with their gender category in case of negative compared to positive individual feedback (4.36 vs. 3.41; $F(1, 75) = 4.74$, $p < .05$), female participants showed no difference between conditions (3.84 vs. 3.48; $F < 1$). Participants who received negative individual feedback reported higher identification than those who received positive individual feedback in the women-better condition (4.31 vs. 3.43*;* $F(1, 75) = 4.07$, p < .50). No difference was found in the men-better condition (3.36 vs. 3.96, p > .15). In line with our assumptions, these effects were qualified by the significant three-way interaction ($F(1, 75) = 11.24$, $p < .005$). Here, too, supplementary analyses were conducted to identify differences in the responses of male vs. female participants.

Focussing on male participants only, the interaction of relative gender performance and individual performance was again significant, $F(1, 35) = 36.03$, $p < .001$, indicating higher gender identification in case of positive compared to negative individual feedback in the men-better condition (4.19 vs. 2.77; $F(1, 35) = 10.66$, $p < .005$, $r = .45$). By contrast, in the women-better condition, higher gender identification was reported following negative compared to positive individual feedback (5.45 vs. 3.14), $F(1, 35) = 27.00$, $p < .001$, $r = .66$.

A supplementary analysis focussing on female participants showed no significant effects ($F < 1$).

Global self-esteem

Besides a marginal significant main effect of sex of participant (female participants: 6.55 versus male participants 5.95; $F(1, 75) = 3.89$, $p < .06$) there was no significant effect ($p > .17$). Overall, participants' global self-esteem was quite high ($M = 6.25$).

Mediation of the FA-effect

While the interaction of relative gender performance and individual performance was only assumed and found for male participants, the following mediational analyses were only run for this gender group. We conducted regression analyses proposed by Baron and Kenny (1986) in order to test that the effects found on male participants' state self-esteem are mediated by males' tendencies to identify more or less strongly with their gender category depending on the manipulations.

The two-way interaction of relative gender performance x individual performance predicted state self-esteem ($\beta = .85$, $p < .001$) and gender identification ($\beta = 1.24$, $p < .001$) in step one. Gender identification predicted state self-esteem in step two ($\beta = .55$, $p < .001$), and in step three, the relationship between the two-way interaction and state self-esteem was reduced to non-significance when state self-esteem was regressed on the two-way interaction and gender identification ($\beta = .31$, $p > .10$). In addition, Sobel's test (Sobel, 1982) indicated that the mediator (gender identification) carries the influence of the two-way interaction on prediction of state self esteem ($z = 3.39$, $p < .001$). A reverse mediation was not found.[2]

Discussion

Experiment 1 indicates that negative performance feedback can lead to increases in state self-esteem, a finding opposing the idea that failure in self-relevant domains always threatens self-esteem (e.g., Crocker et al., 2003; Crocker & Park, 2004). We found negative feedback or perceived failure to be associated with high state self-esteem if male participants got negative

feedback about their performance on a test in which women in general were reported to outperform men (i.e., women better condition). In this case, state self-esteem was equally as high as state self-esteem after success in a male domain (i.e., men better condition). As expected, this effect was mediated by how strongly male participants identified with the male gender category.

By contrast, women did not profit affectively from failure in a cross-sexed domain and only indicated a higher state self-esteem when receiving positive individual feedback. This effect was independent of identification tendencies with the female gender category. In fact, women felt most positively about themselves when they were led to believe that they performed well on a test in which men in general outperform women. (Although they might feel more pleased by the positive feedback if men in general outperform women because here the dimension carried greater social valence, as has been outlined above, or because they have obviously overcome the handicap or stigma of being a low-performing woman; Crocker et al., 1998). This, however, supports the notion that domains in which high-status groups excel are of high social valence (e.g., Ridgeway, 1991), with the consequence that being good in those domains does permit some positive individual outcomes.

As a result, Experiment 1 offers clear support for our hypothesis that personal failure can serve positive self-evaluative functions if it renders men prototypical of the male gender category. Up to this point, however, we do not know whether this effect holds beyond the gender context. Thus, in Experiment 2 we will try to replicate these findings using other groups/categories which differ in social status.

Experiment 2

We decided to select groups of students from different majors (students of business administration vs. teaching students). Students of business administration, representing a high status group, should exibit the same tendency as male participants in Experiment 1. They are expected to profit affectively from negative individual feedback when the test is presented as

showing better overall scores for teaching students (i.e., representing a low status group). By contrast, teaching students are expected to show an increase in state self-esteem only after positive rather than negative performance feedback.

Method

Subjects and Design

One hundred-and-ninety-eight German university students participated in the experiment that was labelled "intelligence and environment" (mean age: 23.26). Subjects were randomly assigned to experimental conditions in a 2 (individual feedback: negative versus positive) x 2 (relative group performance: high status group [business students] better vs. low status group [teaching students] better) x 2 (group membership of participant: business student vs. teaching student) factorial design. Participant's sex was included as a control variable. A pretest had shown business students and teaching students vary in their perceived status among students: independent of participants' sex, the status of the business students was judged higher than the status of the teaching students, $F(1, 24) = 25.75$, $p < .001$, $r = .72$. The experiment was run in single sessions and lasted approximately 25 minutes.

Design and Procedure

The procedure was very similar to that in Experiment 1, except that average test scores on the ATLG1 were attributed to business students vs. teaching students, instead of women and men. Subjects were teaching students and business students. The sex of the stimulus person was counterbalanced. At the end of the experiment, participants were thoroughly debriefed and dismissed by a research assistant.

Material

Participants responded to all items on 8-point scales ranging from "strongly disagree" (1) to "strongly agree" (8). We measured participant's state-self esteem (Cronbach's *alpha* = .63) and global self-esteem (Cronbach's *alpha* = .78) with the items already used in Experiment 1. We assessed participant's identification with her or his own field of study with

items adapted from Luthanen and Crocker's (1992) subscale *identity* from their *collective self-esteem scale* (Cronbach's *alpha* = .80): "Overall, my field of study has very little to do with how I feel about myself;" "The field of study I belong to is an important reflection of who I am;" "The field of study I belong to is unimportant to my sense of what kind of a person I am;" and "In general, belonging to social groups is an important part of my self-image." Finally, participants had the opportunity to write down what they believed the study was aiming at.

Results and Discussion

Unless noted otherwise, the data of 198 subjects were analyzed by 2 (relative group performance) x 2 (individual feedback) x 2 (group membership of participants) univariate analyses of variance (ANOVAs). Because there were no reliable effects of participant's sex, the data were pooled over this variable.

State self-esteem

The first section of Table 2 displays participants' state self-esteem as a function of relative group performance, individual performance, and group membership. Results showed that participants with positive compared to negative individual feedback reported higher state self-esteem (4.92 vs. 4.49), $F(1, 190) = 9.84$, $p < .005$. Two significant two-way interactions occurred. First, teaching students reported higher state self-esteem after positive compared to negative individual feedback (5.06 vs. 4.24), $F(1, 190) = 12.61$, $p < .001$. By contrast, for business students there was no difference between conditions (4.80 vs. 4.76; $F < 1$), resulting in a significant individual performance x group membership interaction, $F(1, 190) = 8.11$, $p < .01$. Second, participants receiving positive compared to negative individual feedback reported higher state self-esteem in the business group-better condition (5.26 vs. 4.34), $F(1, 190) = 21.83$, $p < .001$. No difference was found in this regard in the teaching group-better condition (4.62 vs. 4.66, $F < 1$), resulting in a significant individual performance x relative group performance interaction ($F(1, 190) = 12.15$, $p < .001$). Again, these effects were

qualified by the predicted three-way interaction, $F(1, 190) = 4.13$, $p < .01$. As in Experiment 1, we conducted seperate analyses for business students vs. teaching students only.

Given business students only, the interaction of relative group performance and individual performance was significant, $F(1, 95) = 10.80$, $p < .001$, a finding that is in accord with the results of Experiment 1. While higher state self-esteem was reported after positive compared to negative performance feedback in the business group-better condition (5.25 vs. 4.44), $F(1, 95) = 6.07$, $p < .05$, $r = .25$, a higher state self-esteem was reported after negative compared to positive individual feedback in the teaching group-better condition (5.10 vs. 4.37), $F(1, 95) = 4.82$, $p < .05$, $r = .22$. Here, again, we found evidence that members of a high-status group (i.e., business students) react with an increase in state self-esteem after an alledged poor performance on a test where, on average, their high-status ingroup underperformed relative to a low status outgroup. Thus, across two experiments using different high-status groups, we found consistent support for our assumption that belonging to a high-status group can elevate feelings of self-worth after personal failure, if this failure renders oneself prototypical for one's high-status ingroup.

Again consistent with Experiment 1, the supplementary analysis conducted with teaching students only showed a significant main effect of individual performance, $F(1, 95) = 29.89$, $p < .001$. They reported higher state self-esteem after positive compared to negative individual feedback (5.06 vs. 4.24). Again, the interaction of relative group performance and individual performance failed to be significant, $p > .17$. In accord with the findings of Experiment 1, low-status persons did not show an increase in state self-esteem following an alledged poor performance. Overall, we found a pattern identical to that in Experiment 1.

Ingroup Identification

The second section of Table 2 displays participants' identification with their field of study as a function of relative group performance, individual performance, and group membership of participants. Participants with negative compared to positive individual

feedback reported higher identification in the teaching group-better condition (4.71 vs. 4.03), $F(1, 190) = 15.55$, $p < .001$). No difference was found in the business group-better condition (4.21 vs. 4.52, $p < .08$), resulting in a significant individual performance x relative group performance interaction, $F(1, 190) = 16.45$, $p < .001$. This effect was qualified by the predicted three-way interaction, $F(1, 190) = 16.46$, $p < .001$. All other effects were not significant, $p > 12$. In subsequent supplementary analyses for business students vs. teaching students only, we replicated the findings of Experiment 1.

As expected, for business students only the interaction of relative group performance and individual performance was significant, $F(1, 95) = 20.74$, $p < .001$. A higher ingroup identification was reported in case of positive compared to negative individual feedback in the business students-better condition (4.76 vs. 4.02; $F(1, 95) = 5.87$, $p < .05$, $r = .24$). By contrast, in the teaching students better-condition, a higher identification was reported after negative compared to positive individual feedback (5.11 vs. 3.88), $F(1, 95) = 15.83$, $p < .001$, $r = .38$. No significant effects were found for teaching students, all $p > .20$. In sum, while identification tendencies of high-status targets with their ingroup were determined by their individual performance relative to the average performances of the reference groups, low-status targets' identification with their ingroup was unaffected by our manipulations. These results are consistent with those of Experiment 1.

Global self-esteem

Again, we found no effects on participants' global self esteem ratings, $p > .17$, indicating that stable aspects of people's self-esteem were unaffected by our manipulations. Overall, participants reported a high global self-esteem ($M = 6.21$).

Mediation of the FA-effect

As the Failure-as-an-Asset effect occurred – as predicted – for business students only, we again ran a meditational analysis for this group only. The regression analyses for business students show that, in step one, the two-way interaction of relative group performance x

individual performance predicted participants state self-esteem (β = .55, $p < .005$) and identification with their field of study (β = .73, $p < .001$). Participants' identification with their field of study predicted participants state self-esteem in a second step (β = .71, $p < .001$), and in step three, the relationship between the two-way interaction and predicted occupational success was reduced to nonsignificance when state self-esteem was regressed on the two-way interaction and identification with their field of study (β = .04, *n.s.*). In addition, Sobel's test (Sobel, 1982) indicated that the mediator (identification with their own group) carries the influence of the two-way interaction on prediction of state self esteem ($z = 4.13$, $p < .001$). No reverse mediation was found in this supplementary analysis.[3]

General Discussion

When and why failing feels good

People want to believe in their skills and abilities, are inclined to maintain positive images about themselves, and want to be liked and appreciated by others (e.g., Baumeister, 1998; Leary & Downs, 1995; Taylor & Brown, 1988; Tesser, 1988). It can be understood as a kind of truism in social psychology that individual success serves these goals much better than individual failure. However, as we have shown here, personal failures in self-relevant domains do not invaribly cause a drop in state self-esteem, just as failure does not invariably cause negative evaluations by others (see Reinhard et al., 2008). People who received negative feedback about their abilities in the domain of innovative thinking evaluated themselves fairly positively if they were led to believe that their performance was highly prototypical of their high social status ingroup. To be more concrete, men (business students) showed high self-esteem when they failed on a test of innovative thinking as long as they were convinced that men (business students) in general scored much lower than women (teaching students) in general. It is important to note that a positive social identity did not simply protect high-status people against the threat, but - in cases of high perceived

prototypicality – actually led to a boost in state self-esteem. This boost in self-esteem was completely mediated by a strong identification with the ingroup.

Taken together, these findings can best be interpreted in the light of social identity theory and self categorization theory (Abrams & Hogg, 2001; Hogg, 2001, 2005; Turner et al., 1987). Since feelings of self-worth have been shown to depend largely on affiliations with relevant social groups (Tropp & Wright, 2001), not only does mere membership represent a source for a positive self-view, but the more people comply with the requirements and norms necessary to become a central member of the group, the higher people advance in group hierarchies and the more they are imbued with popularity and social influence (Eidelman et al., 2006; Hogg, 2001, 2005). As a consequence, ingroup prototypicality fosters positive self evaluations (Anderson et al., 2006).

When failing always hurts: The case of low-status group members

Members of low status groups (here: women or teaching students) did not profit from failure in terms of self-esteem enhancement in any of the experimental conditions. They always showed higher state self-esteem after success than after failure. In line with our predictions, failure of low status group members led neither to stronger identification with the ingroup, nor to a heightened state self-esteem. We predicted this data pattern because we assumed that a positive identification with a low-status ingroup has no protective function in case of personal failure because it does not offer a positive social identity.

This assumption, however, cannot go undisputed, for some authors have strongly suggested that being a member of a low status or even stigmatized group can immunize people against negative individual feedback (Branscombe, Schmitt & Harvey, 1999; Crocker & Major, 1989). Negative feedback can be qualified by focusing on mere ingroup comparisons (leading to a standard shift, Biernat & Thompson, 2002), or be attributed to prejudice based on the low social status or stigma associated with the ingroup. As a consequence, members of low status groups or even stigmatized groups very often do not

suffer from lower self-esteem. Moreover, recent research found that especially highly identified minority group members are relatively immune to losses of self-esteem under conditions of collective threat (Garcia & Cohen, 2005).

In the present studies, we found no evidence that the effects of failure on self-esteem can be attenuated by the salience of poor performance of fellow group members of low status. However, the Crocker and Major (1989) argument may claim a certain validity regarding the success condition. In both experiments we found that with members of a low-status group, the highest state self-esteem can be observed after a success on a dimension where the high-status group outperformed the low-status group. Here, the success might have offered a very self-flatterung attribution of high abilities, because these participants did well despite their handicap or stigma of membership in a low-status group. We cannot, however, rule out at the present time that one will also find a Failure-as-an-Asset effect due to the positive effects of prototypicality and ingroup identification with members of low-status groups who strongly identify with their ingroup before receiving any performance feedback . We did not measure the overall identification with the own gender group or the fields of study and therefore we could not test this assumption.

Further limitations and future Research

The studies presented here found clear support for a Failure-as-an-Asset effect in the context of self-evaluations. Further analyses also supported the assumption that the effect was mediated by identification with the ingroup. However, alternative explanations for the effect should also be discussed. One might assume that the information of the relative gender performance can affect the importance attributed to the dimension of "logical thinking" or the estimated validity of the test used to measure innovative thinking: To begin with, people know that, in general, men are the more successful sex in the workplace. Next in the experiment, they learn that in the test on innovative thinking men score lower than women. To make sense of this somewhat contradictory information, participants may conclude that

either this specific ability cannot be very important or must even be an impediment to occupational success, or that the test is simply not valid or has a negative validity, respectively. Thereby, members of a high status group construe a low score as being objectively positive and end up with a positive self esteem. Although straightforward, this explanation cannot sufficiently account for the whole present data pattern. Such an argument should obviously hold for members of both the low and high status group. Scoring low on an ability that is an impediment to success should also be positive for members of the low-status group. Our results did not found such a positive effect of failure with low-status group members. Moreover, Stahlberg and Reinhard (2003) were able to show that the FA-effect could not be explained by the mediating variables "importance/impedimental quality of the task" in their person perception paradigm.

Future research should also investigate possible moderaters of the Failure-as-an Asset-effect. For example, it could be assumed that this effect is stronger for people who feel that their status within their group is threatened, or for those people who actually perceive their group prototypicality as low. Moreover, participants in the present study were mostly socialized within a Western European culture. It is an open question for future research whether the present theorizing will lead to valid predictions also in collectivistic cultures, where social identity might be even more salient than in individualistic cultures. Research by Heine and his colleagues (Heine & Lehman, 1995; Heine & Hamamura, 2007) has demonstrated that people with collectivistic backgrounds (e.g., Asians) will be less prone to use ingroup favorism in order to boost their self-esteem. This might suggest a reduced Failure-as-an-Asset effect in these cultures.

References

Abrams, D., & Hogg, M. A. (2001). Comments on the motivational status of self-esteem in social identity and intergroup discrimination. In Michael A. Hogg & D. Abrams (Eds.), *Intergroup relations: Essential readings* (pp. 232-244). New York, NY, US: Psychology Press.

Anderson, C., Srivastava, S., Beer, J. S., Spataro, S. E., & Chatman, J. A. (2006). Knowing your place: Self-perceptions of status in face-to-face groups. *Journal of Personality and Social Psychology, 91,* 1094-1110.

Barkow, J. H. (1975). Prestige and culture: A biosocial interpretation. *Current Anthropology, 16,* 553-562.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of Personality and Social Psychology, 51, 1173-1182.

Baumeister, R. F. (1998). The self. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 2, pp. 680–740). New York: McGraw-Hill.

Bem, S. L., & Lenney, E. (1976). Sex typing and the avoidance of cross-sex behavior. *Journal of Personality and Social Psychology, 33(1)*, 48-54.

Biernat, M., & Thompson, E. R. (2002). Shifting standards and contextual variation in stereotyping. *European Review of Social Psychology, 12, 103-137.*

Block, J. & Robins, R. W. (1993). A longitudinal study of consistency and change in self-esteem from early adolescence to early adulthood. *Child Development, 94,* 909-923.

Branscombe, N. R., Schmitt, M. T., & Harvey, R. D. (1999). Perceiving pervasive discrimination among African-Americans: Implications for group indentification and well-being. *Journal of Personality and Social Psychology, 77, 135-149.*

Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity and compliance. In D. T. Gilbert, S. T. Fiske, & L. Gardner (Eds.), *The handbook of social psychology* (pp. 151-192). New York, NY: McGraw-Hill.

Cialdini, R. B., Borden, R. J., Thorne, A., Walker, M. R., Freeman, S., & Sloan, R. L. (1976). Basking in reflected glory: Three (football) field studies. *Journal of Personality and Social Psychology, 34,* 366-375.

Cohen, G., & Garcia, J. (2005). I am us: Negative stereotypes as collective threats, *Journal of Personality and Social Psychology, 89,* 566-582.

Crocker, J., Karpinski, A., Quinn, D. M., & Chase, S. (2003). When grades determine self-worth: Consequences of contingent self-worth for male and female engineering and psychology majors. *Journal of Personality and Social Psychology, 85,* 507-516.

Crocker, J., Major, B., & Steele, C. (1998). Social stigma. In D. T. Gilbert, S. T. Fiske, & L. Gardner (Eds.), *The handbook of social psychology* (pp. 504-553). New York, NY: McGraw-Hill.

Crocker, J., & Park, L. E. (2004). The costly pursuit of self-esteem. *Psychological Bulletin, 130,* 392-414.

Crocker, J., Sommers, S. R., & Luhtanen, R. K. (2002). Hopes dashed and dreams fulfilled: Contingencies of self-worth and admissions to graduate school. *Personality and Social Psychology Bulletin, 28,* 1275-1286.

Dauenheimer, D., Stahlberg, D., Frey, D., & Petersen, L. E. (2002). Die Theorie des Selbstwertschutzes und der Selbstwerterhöhung. In D. Frey & M. Irle (Hrsg.), *Theorien der Sozialpsychologie.* Band 3: Motivations-, Selbst- und Informationsverarbeitungstheorien. (S. 159-190). Bern: Huber.

Dittes, J. (1959). Attractiveness of a group as a function of self-esteem and acceptance by group. *Journal of Abnormal and Social Psychology, 59, 77-82.*

Eidelman, S., Silvia, P. J., & Biernat, M. (2006). Responding to deviance: Target exclusion and differential devaluation. *Personality and Social Psychology Bulletin, 32(9),* 1153-1164.

Feather, N. T. (1994). *Attitudes toward high achievers and reactions to their fall: Theory and research toward tall poppies.* In L. Berkowitz (ed), Advances in experimental social psychology (Vol. 26, pp. 1-73). New York: Academic Press.

Feather, N. T., & Sherman, R. (2002). Envy, Resentment, Schadenfreude, and Sympathy: Reactions to Deserved and Undeserved Achievement and Subsequent Failure. *Personality and Social Psychology Bulletin, 28,* 953-961

Heatherton, T. F., & Polivy, J. (1991). Development and validation of a scale for measuring state self-esteem. *Journal of Personality and Social Psychology, 60,* 895-910.

Heine, S. J., & Lehman, D. R. (1995). Cultural variation in unrealistic optimism: Does the West feel more invulnerable than the East? *Journal of Personality and Social Psychology, 68, 595-607.*

Heine, S. J., & Hamamura, T. (2007). In search of East Asian self-enhancement. *Personality and Social Psychology Review, 11, 1-24.*

Heller, K.A.,Kratzmeier, H. und Lengfelder, A., (1998). *Matrizen-Test-Manual, Band 2. Ein Handbuch mit deutschen Normen zu den Advanced Progressive Matrices von J.C. Raven.* Göttingen: Beltz-Test.

Hogg, M. A. (2001). Social identification, group prototypicality, and emergent leadership. In M. A. Hogg & D. J. Terry (Eds.), *Social identity processes in organizational contexts* (pp. 197-212). Philadelphia: Psychology Press.

Hogg, M. A. (2005). All animals are equal but some animals are more equal than others: Social identity and marginal membership. In K. D. Williams, J. P. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying* (pp. 243-261). New York: Psychology Press.

Hogg, M. A. (2006). Social identity theory. In P. J. Burke (Ed.), Contemporary social psychology theories (pp. 11-136). Pala Alto, CA: Stanford University Press.

Hogg, M. A., & Abrams, D. (1988). *Social identifications: A social psychology of intergroup relations and group processes*. London: Routledge.

Lau, R. R., & Russell, D. (1980). Attributions in the sports pages. *Journal of Personality and Social Psychology, 39(1)*, 29-38.

Leach, C. W., Spears, R., Branscombe, N. R., & Doosje, B. (2003). Malicious pleasure: Schadenfreude at the suffering of another group. *Journal of Personality and Social Psychology*, *84,* 932-943.

Leary, M. R., & Downs, D. L. (1995). Interpersonal functions of the self-esteem motive: The self-esteem system as sociometer. In M. H. Kernis (Ed.), *Efficacy, agency, and self-esteem* (pp. 123–144). New York: Plenum.

Leutze (1995*). Individuelles und kollektives Selbst als Komponenten von Identität.* Unpublished diploma thesis.

Luhtanen, R., & Crocker, J. (1992). A Collective Self-Esteem Scale: Self-Evaluation of One's Social Identity. *Personality and Social Psychology Bulletin, 18,* 302-318.

Major, B., Gramzow, R. H., McCoy, S. K., Levin, S., Schmader, T., & Sidanius, J. (2002). Perceiving personal discrimination: The role of group status and legitimizing ideology. *Journal of Personality and Social Psychology, 82(3),* 269-282.Metcalfe, J., & Mischel, W. (1999). A hot/cool-system analysis of delay of gratification: Dynamics of willpower. *Psychological Review, 106(3),* 3-19.

Nummenmaa, L., & Niemi, P. (2004). Inducing affective states with success-failure manipulations: A meta-analysis. *Emotion, 4(2)*, 207-214.

Raven, J.C. (1998). Advanced Progressive Matrices. Oxford: Oxford Psychologists Press.

Reinhard, M.-A., Stahlberg, D., & Messner, M. (2008). Failure as an asset for high-status persons – relative group performance and attributed occupational success. *Journal of Experimental Social Psychology, 44*, 501-518.

Ridgeway, C. L. (1991). The social construction of status value: Gender and other nominal characteristics. *Social Forces, 70,* 367-386.

Rosenberg, M. (1989). *Society and the adolescent self image*. Middletown, CT: Wesleyan University Press.

Schlenker, B. R., Weigold, M. F., & Hallam, J. R. (1990). Self-serving attributions in social context: Effects of self-esteem and social pressure. *Journal of Personality and Social Psychology, 58(5),* 855-863.

Schmader, T., Major, B., Eccleston, C. P., & McCoy, S. K. (2001). Devaluing domains in response to threatening intergroup comparisons: Perceived legitimacy and the status value asymmetry. *Journal of Personality and Social Psychology, 80(5),* 782-796.

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equations models. In S. Leinhart (Ed.), *Sociological methodology 1982* (pp. 290-312). San Francisco: Jossey-Bass.

Srivastava, S., & Beer, J. S. (2005). How self-evaluations relate to being liked by others: Integrating sociometer and attachment perspectives. *Journal of Personality and Social Psychology, 89,* 966-977.

Stahlberg, D., & Reinhard, M. A. (2003). „Der Dümmste der Dummen“ Garantie für den späteren Berufserfolg (Stupid as hell: A warrant for occupational success.). Vortrag, gehalten auf der 9. Tagung der Fachgruppe Sozialpsychologie, Heidelberg.

Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In S. Worchel & W. G. Austin (Eds.), *The social psychology of intergroup relations* (pp. 33-47). Monterey, CA: Brooks/Cole.

Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behavior. In S. Worchel & W. Austin (Eds.), *Psychology of intergroup relations* (pp. 7-24). Chicago: Nelson-Hall.

Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social– psychological perspective on mental health. *Psychological Bulletin, 103,* 193–210.

Tesser, A. (1988). Toward a self-evaluation maintenance model of social behavior. In L. Berkowitz (Ed.), *Advances in experimantal social psychology* (Vol. 21, pp. 181-227). San Diego, CA: Academic Press.

Tetlock, P. E., & Levi, A. (1982). Attribution bias: On the inconclusiveness of the cognition-motivation debate. *Journal of Experimental Social Psychology, 18,* 68-88.

Tropp, L. R. & Wright, S. C. (2001). Ingroup identification as inclusion of ingroup in the self. *Personality and Social Psychology Bulletin, 27,* 585-600

Turner, J. C. (1991). *Social influence.* Pacific Grove, CA: Brooks/Cole.

Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S., & Wetherell, M. S. (1987). *Rediscovering the social group: A self-categorization theory*. Oxford: Blackwell.

Turner, J. C., Hogg, M. A., Turner, P. J., & Smith, P. M. (1984). Failure and defeat as determinants of group cohesiveness. *British Journal of Social Psychology, 23,* 97 111.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review, 92, 548-573.*

Wood, J. V. (1989). Theory and research concerning social comparisons of personal attributes. *Psychological Bulletin, 106,* 231–248.

Table 1

Means for reported state self-esteem and identification with one's own gender group as a function of relative group performance, individual performance, and sex of participants (N = 83)

	Sex of Participant			
	Female Participant		Male Participant	
Relative Gender Performance	Individually good	Individually poor	individually good	individually poor
State self-esteem				
Men are better	5.04 (12)	3.79 (12)	5.26 (9)	3.65 (11)
Women are better	4.50 (9)	3.88 (11)	3.57 (9)	4.93 (10)
Ingroup Identification				
Men are better	3.79 (12)	3.90 (12)	4.19 (9)	2.77 (11)
Women are better	3.72 (9)	3.27 (11)	3.14 (9)	5.45 (10)

Note. State self-esteem and identification with one's own gender group were measured on 8-point Likert-type scales, with a higher mean expressing higher state self-esteem and stronger identification with one's own group.

Table 2

Means for reported state self-esteem and identification with one's own group as a function of relative group performance, individual performance, and group membership of participants (*N* = 198)

	Group membership of Participant			
	Teaching students		BusinessStudents	
Relative Group Performance	Individually good	Individually poor	individually good	individually poor
State self-esteem				
Business students are better	5.28 (22)	4.25 (27)	5.25 (25)	4.44 (25)
Teaching students are better	4.87 (24)	4.24 (26)	4.37 (26)	5.10 (23)
Ingroup Identification				
Business students are better	4.24 (22)	4.38 (27)	4.76 (25)	4.02 (25)
Teaching students are better	4.19 (24)	4.33 (26)	3.88 (26)	5.11 (23)

Note. State self-esteem and identification with one's own group were measured on 8-point Likert-type scales, with a higher mean expressing higher state self-esteem and stronger identification with one's own group.

[1] Analyses including the whole sample yielded no different results.

[2] If gender identification was alternatively regressed on the two-way interaction and state self-esteem, the relationship between identification and the two-way interaction was only slightly reduced and remained highly significant ($\beta = .50$, $p < .001$). In steps one and two, respectively, the two-way interaction predicted identification ($\beta = .67$, $p < .001$), and state self-esteem predicted identification ($\beta = .55$, $p < .001$).

[3]If identification was alternatively regressed on the two-way interaction and state self-esteem, the relationship between identification and the two-way interaction was still highly significant ($\beta = .38$, $p < .001$). In steps one and two, respectively, the two-way interaction predicted identification ($\beta = .73$, $p < .001$), and state self-esteem predicted identification ($\beta = .71$, $p < .001$). The results showed, in line with our assumptions, that the mediational effect of identification with ones own group on state self-esteem could be clearly confirmed, and that the reverse mediation was not found.